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VOL. 8 No. 7

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U. S. DEPARTMENT OF AGRICULTURE

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
Agricultural Research Service
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Volume 8 February 14, 1958 Number 7

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

SPOTTED ALFALFA APHID remains light in Oklahoma, Texas and New Mexico. (p. 104).

No MEDITERRANEAN FRUIT FLY collected in Florida since November 26, 1957. (p. 104).

SUMMARY OF INSECT CONDITIONS - 1957 South Dakota (p. 107), Nebraska (p. 110), Minnesota (p. 116).

INSECTS not known to occur in the United States. (p. 121).
NOTE: Separates of this series that were issued in Cooperative Economic Insect Report during 1957 have been assembled under one cover and are now available upon request. There are 36 species included in the compilation.

CORRECTION. (p. 106).

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Reports in this issue are for the week ending February 7 unless otherwise designated.

WEATHER OF THE WEEK ENDING FEBRUARY 10

Freezing in the Deep South at the beginning of the period and a severe cold wave in all areas east of the Rockies over the weekend featured the week's weather. On the morning of the 4th low temperatures were 32° at New Orleans, La., and 24° and 37° at Tampa and Miami, Fla., respectively. The 24° at Tampa was the lowest there for January since 23° was recorded in January 1905. In Florida's Everglades region, temperatures on the 5th remained below freezing from 8 to 13 hours with lows ranging from 20° to 34°. This freeze caused additional slight damage to citrus, and heavy damage to vegetables, uprotected strawberries, and undetermined damage to several other crops. This winter season with its cold, wet weather has been one of the most unfavorable for agriculture in the history of Florida. Cold air began pouring into the northern Great Plains on the 5th, reached southern Texas on the 6th and the east coast during the weekend. Mobile, Ala., recorded 27° on both the 8th and 9th, and on the latter date Tallahassee and Jacksonville, Fla., reported 30° and 32° respectively. In the northern Great Plains and upper Mississippi Valley temperatures dropped below zero the last 4 nights of the period and remained near the zero level during the days. International Falls, Minn., had a low of -22° and a high of -4° on the 8th. Temperatures for the week averaged below normal everywhere east of the Continental Divide, except in southwestern Great Plains where they were slightly above. Departures were 15° at St. Louis, Mo., 12° in the Florida Peninsula, and 9° in the northern Great Plains. (Continued on page 106).

CEREAL AND FORAGE INSECTS

GREENBUG (*Toxoptera graminum*)-NEW MEXICO - Light infestation in Curry and Quay Counties averaged 2 per linear foot of wheat in one field in Curry County. (Nielsen) TEXAS - Infesting wheat in Rockwall County on January 24. (Hawkins)

EUROPEAN CORN BORER (*Pyrausta nubilalis*) - CONNECTICUT - Fall survey shows the average number of borers per 100 plants for 1957 to be 22 in District 1 and 87 in District II, as compared with 33 and 77 for 1956, giving State means of 54 for 1957 and 55 for 1956. (Turner).

SPOTTED ALFALFA APHID (*Therioaphis maculata*)-OKLAHOMA - Populations remain static in Stillwater area. (Bieberdorf). Numbers are rare to very light in southeastern and extreme eastern counties. (Coppock). NEW MEXICO - Light infestations throughout most fields checked in Dona Ana, Eddy, Luna and Hidalgo Counties causing no apparent damage. No alate forms found. (Nielsen). TEXAS - Infestations light on alfalfa, Rockwall County. (Hawkins).

CHINCH BUG (*Blissus leucopterus*)-OKLAHOMA - Report of survey in 4 additional southwestern counties shows the average number of bugs in hibernation per square foot of bunch grass to be 319 in Tillman County, 9.2 in Harmon County, 18.2 in Beckham County and 4.8 in Greer County. (Coppock, Fed.-State Chinch Bug Survey).

A BILLBUG (*Calendra phoeniciensis*)-NEW MEXICO - Light to moderate infestation of larvae in Bermuda grass at Mesilla Park, Dona Ana County. (Nielsen).

A LYGUS BUG (*Lygus elisus*) - NEW MEXICO - Overwintering in large numbers in wheat fields, Harding County. (Nielsen).

A STINK BUG (*Euschistus conspersus*)-CALIFORNIA - Damaging cover crops in Gold Hill area, El Dorado County. Usually not found at this time of year. (Cal. Coop. Rept.).

FRUIT INSECTS

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) - FLORIDA - No new fly finds since November 26, 1957, making 66 fly free days to date (January 31). (Bittner).

CALIFORNIA RED SCALE (*Aonidiella aurantii*)-CALIFORNIA - Heavy infestations on citrus and ornamental nandina at Visalia, Tulare County. (Cal. Coop. Rept.).

CITRUS WHITEFLY (*Dialeurodes citri*)-CALIFORNIA - Survey in Sacramento revealed 3 new lightly infested blocks, bringing the total to 22 blocks to date. (Cal. Coop. Rept.).

CITRUS RED MITE (*Panonychus citri*)-CALIFORNIA - Reported light to heavy on citrus, San Diego County. (Cal. Coop. Rept.).

LECANIUM SCALE (probably *Lecanium corni*)-OREGON - Building up in several prune and cherry orchards in northern Marion County. (Stphenson).

SPIDER MITES (*Tetranychus* spp.) - NEW MEXICO - Overwintering females alive under bark and along roots of weeds below soil surface in 2 orchards, Lincoln County. (Nielsen).

CLOVER MITE (*Bryobia praetiosa*)-NEW MEXICO - Eggs very numerous to few in number on apple trees, Lincoln and Otero Counties. (Nielsen). This is now under study as a complex of species and will be carried in CEIR as *B. praetiosa* complex until further notice. Morgan, C. V. C. and Anderson, N. H. 1957. *Canad.* Ent. 89(11):485-490.

TRUCK CROP INSECTS

APHIDS - CALIFORNIA - Several species reported on citrus, celery and cole crops, Los Angeles County. Occurrence this early is unusual. (Cal. Coop. Rept.).

GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*)-CALIFORNIA - Damaging semi-dormant foliage of *Olollie blackberries* in *Santa* Cruz County. (Cal. Coop. Rept.).

SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*)-MISSISSIPPI - Adults collected from mustard and turnips Jones County, January 31. (Sumrall).

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*)-MISSISSIPPI - Larvae feeding on leaves of mustard and turnips Jones County, January 31. (Sumrall).

YELLOW-MARGINED LEAF BEETLE (*Microtheca ochroloma*)-MISSISSIPPI - Adults and larvae collected from mustard and turnips, Jones County, January 31. (Sumrall).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BLACK VINE WEEVIL (*Brachyrhinus sulcatus*)-MARYLAND - Damaging azaleas in greenhouse at Kingsville, Baltimore County. (U. Md., Ent. Dept.).

ROSE APHID (*Macrosiphum rosae*)-NEW MEXICO - Light infestation on roses in southern part of State. (Nielsen).

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*)-CALIFORNIA - Heavy infestation reported from dying parkway trees in Sacramento. This is the third record from this location. The first beetles were taken from elm logs of unknown origin in June 1957. (Cal. Coop. Rept.).

A SHOT HOLE BORER (*Xyleborus saxeseni*)-CALIFORNIA - Adults heavy in elm bark at Novato, Marin County. (Cal. Coop. Rept.).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (*Hypoderma* spp.)-OKLAHOMA - Counts in Woodward County, January 29, averaged 10.3 grubs per head in 81 yearling steers and 5.5 per head in 40 mature cows. (Allison). VIRGINIA - *H. lineatum* averaged 8 per head in 20 beef calves, Montgomery County. (Turner). MARYLAND - *H. lineatum* averaged 8 grubs per animal in one small lot of young beef animals bought at a sale in College Park, Prince Georges County. Young beef animals reared at College Park were practically grub free. (U. Md., Ent. Dept.).

MOSQUITOES - CALIFORNIA - Heavy infestation of *Anopheles freeborni* annoying residents in cities along Sacramento River from Redding to Sacramento. These hibernating females were brought out by heavy rains followed by warm days, but will go back to hibernation upon return of cool weather. (Cal. Coop. Rept.).

COCKROACHES - GEORGIA - Joint infestation of *Supella supellectilium* and *Blattella germanica* of units in large apartment house in Atlanta, Fulton County. Det. H. G. Scott. (CDC Ent. Mus.).

TROPICAL RATE MITE (*Ornithonyssus bacoti*)-MARYLAND - Biting occupants in home at Hagerstown, Washington County. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

A DERMESTID (Perimegatoma vespulae) CALIFORNIA - Reported from sacks at Manteca, San Joaquin County. Apparently more widespread than previously known, being collected more frequently from various locations within State. (Cal. Coop. Rept.).

KHAPRA BEETLE (Trogoderma granarium) CALIFORNIA - A new infestation in grain debris at Lancaster, Los Angeles County. (Cal. Coop. Rept.).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - NORTH CAROLINA - Local infestations fround in November, 1957, in Brunswick County (Sessions, Wray) and on 16 December, 1957, in Mecklenburg County (Johnson, Wray), both on sites of previously eradicated infestations. Eradicative treatments have been applied to the new finds. (Farrier, January 10, 1958). Specimens determined by M. R. Smith. FLORIDA - No finds of consequence reported during week ending January 31. (Bittner).

TEXAS LEAF-CUTTING ANT (Atta texana) TEXAS - Active in Newton, Jasper, Polk, Tyler and San Jacinto Counties. (Turney).

BLACK WIDOW SPIDER (Latrodectus mactans) MARYLAND - Infestation in basement of home in Beltsville, Prince Georges County. (U. Med., Ent. Dept.).

LYCTUS BEETLES (Lyctus spp.) VIRGINIA - Heavily damaged wood in 2-year old upholstered chair in Portsmouth, Norfolk County. (Rowell). NORTH CAROLINA - L. planicollis emerging from hardwood floors on January 29, Caldwell County. (Andrews, Scott).

SPIDER BEETLES - OKLAHOMA - Numerous in one residence in Oklahoma City. (Bedingfield). VIRGINIA - Gibbium psylloides collected in office and classroom, V.P.I., Blacksburg, Montgomery County. (Evans).

CORRECTION

CEIR 8(6):92, Legend on Spotted Alfalfa Aphid map should read "from State reports received to January 1, 1958 and from ARS records."

LIGHT TRAPS

	Hel. zea	Pseud. unip.	Plath. scab.	Laph. frug.	Agrot. yps.	Perid. marg.	Felt. subt.	Prod. ornith.
TEXAS								
Brownsville 1/12-2/1	2	125		107	37	36	80	
Weslaco 1/1-31		425		38	44	32	31	54
SOUTH CAROLINA (County)								
Oconee 2/1-7			6					

************************ (Weather continued)

The week was mild in the Far West where weekly averages ranged from 3° above normal in the south to 12° in the north. Precipitation exceeding one-half inch for the week generally was limited to Arizona and the Pacific States, the lower Mississippi Valley, and areas south and east of the Ohio River. Precipitation was very light north of the Ohio River, in the upper Mississippi Basin, and in the Great Plains, falling mostly as light snow or flurries which extended the snow cover ranging from a trace up to 2 or 3 inches as far south as the Texas Panhandle and western Arkansas. (Summary supplied by U. S. Weather Bureau).

SUMMARY OF INSECT CONDITIONS - 1957

SOUTH DAKOTA

Compiled by J. A. Lofgren and W.M. Hantsbarger

Highlights: EUROPEAN CORN BORER populations reached the highest peak since 1954. PALE WESTERN CUTWORMS were more abundant and destructive than usual. SIX-SPOTTED LEAFHOPPERS became quite numerous in the State on various field and garden crops. SPOTTED ALFALFA APHIDS were noted as early as May 23 in the State. MOSQUITOES were abundant and annoying, particularly in the northeast area. Threatening infestations of GRASSHOPPERS exist in some areas. A SCREW-WORM outbreak occurred in the northwest area.

Cereal and Forage Insects: PALE WESTERN CUTWORM (*Agrotis orthogonia*) infestations appeared in many winter wheat, barley, flax and alfalfa fields of the west central and northwest areas. Many acres were damaged and 2000 acres were sprayed for control. Populations in some fields averaged as high as 5 larvae per linear foot of row. Crop loss is estimated at 66,420 bushels of wheat and 310 tons of alfalfa, or a monetary loss of approximately $134,049. ARMY CUTWORM (*Chorizagrotis auxiliaris*) infestations appeared at scattered localities throughout the State on various crops. Infestations averaged approximately 3 larvae per square foot although in some cases infestations were much heavier. In the southeast area, several acres of sorghum had to be replanted. In Brown County upon sandy soils, 10 percent of the young corn plants were damaged. The heaviest infestation observed in 1957 appeared in McCook County where a corn field averaged 3 to 4 larvae per linear foot of row and the alfalfa margin showed 12 larvae per square foot. Here 100 acres of corn had been completely destroyed. It is estimated that 1200 acres in the State received some treatment for control and that army cutworms caused a monetary loss of $142,065. WIREWORM (*Limonius* spp. and *Melanotus* spp.) infestations were noted in wheat and oat fields of the north central and northeast regions where populations averaged 4 larvae per square yard. Little damage was evidenced in the State. Approximately 52 percent of the corn seed planted in the State was treated for wireworms. FALSE WIREWORM (*Eleodes* spp.) infestations appeared in winter wheat of the south central and central regions where populations ranged up to 9 larvae per square yard. Some damage occurred to winter wheat, often in conjunction with that caused by the pale western cutworm. EUROPEAN CORN BORER (*Pyrausta nubilalis*) spring surveys indicated a winter survival of approximately 84 percent in the eight eastern counties surveyed. Pupation was underway the first part of June with moth emergence and egg-laying commencing the latter part of June. Optimum weather conditions prevailed during the ovipositing period. Egg hatch and accompanying "shot-hole" damaged appeared around the middle part of July. The first brood infestation averaged 42 percent with an average of 125 larvae per 100 plants. Flight of second-brood moths, which began around the middle of August, was fairly heavy. The fall survey indicated an average of 79 percent infestation with an average of 339 borers per 100 plants for the 6 districts and 47 counties surveyed. It is estimated that approximately 16,351,000 bushels of corn was lost to the borer, representing a monetary loss of $11,733,000. Approximately 11,355 acres were treated for control, resulting in a saving of $358,591. GRASSHOPPERS - Hatching of eggs was well underway the latter part of June. Weather in most areas was favorable for nymphal development with the exception of the Black Hills area where rainy, cool weather following hatching is believed to have reduced the populations. Nymphal populations in eastern South Dakota were heavy in some scattered localities; as high as 30 per square yard in alfalfa. The first cutting of alfalfa was damaged in many instances. In the west-river country nymphal populations of economic importance were restricted to the Black Hills area where some localized areas showed populations up to 35 per square yard. Adult surveys showed a few areas in the State which are rated threatening to severe. These are (1) two small areas in western Black Hills, (2) most of Campbell and western McPherson Counties, (3) portions of Day, Brown, Clark, Grant, Roberts and Spink Counties, and (4) portions of Clay and Union Counties. Much of the east-river cropland was infested with ratings from non-economic to light, with the exceptions of the previous areas mentioned. The dominant species in the cropland areas was the red-legged grasshopper (*Melanoplus femur-rubrum*). In general, the rangeland infestation throughout the State was non-economic, with the exception of the Black Hills area. The dominant species in this area was *Melanoplus* spp. with some "hot spots" of *Camnula pellucida* showing up. The largest single loss due to grasshoppers in the State was probably to unsprayed alfalfa seed fields in the late summer. Loss to crops from grasshopper activities is estimated at approximately $1,000,000. Approximately 100,000 acres were treated for control, resulting in a saving of $722,000. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) became active and started feeding in April. Feeding injury ranged from 15 to 100 percent of plants showing damage. Larval damage to new seedlings was slight and many successful stands of sweetclover were obtained, indicating that the weevils were not as troublesome as in the past. ALFALFA WEEVIL (*Hypera postica*). Adults were active and feeding in alfalfa by the first week of May in the west central area. Populations of 40-50 larvae per 10 net sweeps were noted in untreated fields of Lawrence and Butte Counties by mid-June. No economic damage was reported to the first cutting of alfalfa due to the late appearance of the larvae. Some damage was reported to later cuttings of alfalfa but in most instances the actual damage was slight. LYGUS BUG (*Lygus* spp.) overwintering adults became active the latter part of April in the eastern areas. By the first part of May populations averaged 4 bugs per 10 net sweeps in alfalfa. Populations at mid-summer averaged 29 per 10 net sweeps in all areas. Injurious infestations were noted on many alfalfa seed crops. ALFALFA PLANT BUG (*Adelphocoris lineolatus*) reached economic numbers on alfalfa the first part of June. Throughout the growing season populations averaged 54 bugs per 10 net sweeps for all areas surveyed. Injurious infestations were noted on many alfalfa seed crops. POTATO LEAFHOPPER (*Empoasca fabae*) was first reported in the State on June 10 when adults were found on alfalfa in Brookings County. By the first part of July populations were averaging 6 per 10 net sweeps on alfalfa in many localities. In the northeast they became very abundant in potato fields where populations ranged up to 150 per 10 net sweeps. In the east central region, many home gardens showed characteristic "hopper-burn" to potatoes. PEA APHIDS (*Macrosiphum pisi*) were first noted in the State upon alfalfa around the first part of May. By the first part of July populations were averaging approximately 200 per 10 net sweeps on alfalfa. Populations dwindled during the hot summer months but built up again during the fall to average approximately 100 aphids per 10 net sweeps. ALFALFA CATERPILLARS (*Colias philodice eurytheme*) larvae appeared in alfalfa fields of the southeastern region around the latter part of April. Throughout the season populations averaged approximately 1 larva per 10 net sweeps. Populations of 5 larvae per 10 net sweeps were noted in the east central region by September. SIX-SPOTTED LEAFHOPPERS (*Macrosteles fascifrons*) were noted upon alfalfa the first part of May in the southeastern area and populations built up to 24 per 10 net sweeps by the latter part of May. Various crops including oats, wheat and flax, were attacked. Populations of 57 per 10 net sweeps on oats and 12 per 10 net sweeps on flax were encountered during the spring and summer. Many reports were received from the northeastern area concerning the "aster-yellows" disease of flax which is transmitted by this leafhopper. Flax loss due to the leafhopper is estimated at 343,980 bushels or $1,011,301. ENGLISH GRAIN APHIDS (*Macrosiphum granarium*) infested small grain throughout the State during late spring and early summer. Populations ranged from 6 to 20 aphids per plant in scattered localities throughout the State. Actual damage was limited to some late-sown grain. VARIEGATED CUTWORMS (*Peridroma margaritosa*) infestations damaged alfalfa some localities in the southern regions of the State. Populations ranged from 1 to 10 larvae per 10 net sweeps in these areas. The heaviest infestation encountered was in Bennett County where larvae averaged 4 per square foot in alfalfa. GREEN CLOVERWORMS (*Plathypena scabra*) - Heavy infestations developed upon alfalfa in the late summer and early fall throughout the eastern portion of the State, averaging 28 larvae per 10 net sweeps. CORN ROOTWORMS (*Diabrotica* spp.) caused little damage. Adults of the northern, southern and western corn rootworms were noted in corn fields around the first part of August. Later in the season many adults went to alfalfa and red clover where counts averaged 7 beetles per

10 net sweeps. Approximately 42,120 acres were treated for control. WEBWORMS (*Loxostege* spp.) - Both garden and alfalfa webworms were noted in alfalfa fields during the summer. Populations up to 30 larvae per 10 net sweeps were recorded in some localized areas. In general, populations were much lighter than in 1956 and little damage was observed.

Truck Crop Insects: SIX-SPOTTED LEAFHOPPERS (*Macrosteles fascifrons*) were numerous in eastern areas on various garden crops, particularly lettuce, radishes and peas. POTATO FLEA BEETLE (*Epitrix cucumeris*) was abundant upon potatoes in the east central and northeast areas. Leaf-feeding damage was heavy on untreated garden potatoes. VARIEGATED CUTWORM (*Peridroma margaritosa*) larval infestations in July were reported heavy on garden crops in Bennett County averaging 4 larvae per plant. CABBAGE LOOPER (*Trichoplusia ni*) was abundant in eastern areas and caused heavy damage to peas, cabbage, broccoli, lettuce and cauliflower. TOMATO PSYLLID (*Paratrioza cockerelli*) was especially damaging to late tomatoes in Pennington County. CUCUMBER BEETLES (*Diabrotica undecimpunctata howardi* and *Acalymma vittata*) were abundant on cucurbits throughout the summer season.

Forest, Ornamental and Shade Tree Insects: LEAF BEETLES (*Calligrapha* spp. and *Chrysomela* spp.) were observed in early spring feeding heavily upon willow. WOOLLY ELM APHID (*Eriosoma americanum*) and ELM COCKSCOMB GALL (*Colopha ulmicola*) were noted on many elm trees of eastern areas through the summer. TENT CATERPILLARS (*Malacosoma* spp.) were found defoliating Chinese elm, cottonwood and other trees in localized areas of Meade County. MOURNING-CLOAK BUTTERFLY (*Nymphalis antiopa*) larval infestations were reported throughout the State, causing some defoliation to elm trees. FALL WEBWORMS (*Hyphantria cunea*) infested most chokecherries and aspens in the Black Hills area late in the summer. HORNWORMS (*Pholus* sp.) were abundant upon Virginia creeper in the west central area. WALNUT CATERPILLAR (*Datana integerrima*) severely defoliated some walnut trees in the southeastern area. WHITE-MARKED TUSSOCK MOTHS (*Hemerocampa leucostigma*) were active in scattered southeastern localities feeding on elm. A heavy infestation of A SCURFY SCALE (*Chionaspis salisis-nigrae*) was reported from Davison County on weeping willow.

Insects Affecting Man and Animals: BLACK FLY (*Simulium* spp.) adults were found in abundance along the lower Big Sioux Valley in May, were detected in the light trap at Brookings and were a nuisance in these two areas during the early summer. MOSQUITOES were very abundant and annoying in the eastern part of the State, particularly the northeast. *Culex* spp. were dominant earlier in the spring with *Aedes* spp. replacing them later in the summer. HOUSE FLIES (*Musca domestica*) began to build up in the eastern part of the State during July and became especially annoying in the fall. STABLE FLIES (*Stomoxys calcitrans*) became severe in east central localities during August. SCREW-WORM (*Callitroga hominivorax*) - An outbreak occurred among cattle herds in Corson and Dewey Counties, involving an area approximately 40 miles wide and 50 miles long just west of the Missouri River. Treatment involved approximately 15 herds. HORN FLIES (*Siphona irritans*) were abundant throughout the State. It is estimated that 48 percent of the cattle in the State received some treatment. CATTLE LICE (*Linognathus vituli*, *Haematopinus eurysternus* and *Bovicola bovis*) were abundant on untreated cattle throughout the State. It is estimated that 32 percent of the cattle in the State received some treatment for lice. CATTLE GRUBS (*Hypoderma* spp.) occurred in usual numbers throughout the State, approximately 10 percent of the cattle received some treatment for grub control.

Beneficial Insects: DAMSEL BUGS (*Nabis* spp.) occurred throughout the summer in alfalfa fields. Populations ranged from 2 to 6 bugs per 10 net sweeps.

In March, many overwintering adult LADY BEETLES (Hippodamia convergens, H. parenthesis and Coccinella novemnotata) were noted in alfalfa fields in southeast and adults averaged 3-4 per 10 sweeps on alfalfa throughout the growing season. INSIDIOUS FLOWER BUGS (Orius insidiosus) were present in alfalfa fields of the central and eastern regions where populations reached 7 bugs per 10 net sweeps.

SUMMARY OF INSECT CONDITIONS - 1957

NEBRASKA

Reported by Lloyd W. Andersen, Roscoe E. Hill, Robert E. Roselle

Highlights: GRASSHOPPERS most severe and widespread since the mid-30's EUROPEAN CORN BORER second generation dealt damaging blow to the corn crop. PALE WESTERN CUTWORM populations continued to remain high in the west. ALFALFA WEEVIL most severe on record the the panhandle area. SPOTTED ALFALFA APHID, only minor damage occurred in the State. GREEN CLOVERWORM common on soybeans and alfalfa in the eastern third of the State. ALFALFA WEBWORM very destructive on alfalfa in southeastern and Republican Valley areas. POTATO PSYLLID populations moderate to heavy on lycium and early potatoes in the panhandle. VARIEGATED CUTWORM moderate to spotted heavy populations on alfalfa and small grains in the Platte Valley. FALL ARMYWORM moderate to severe damage to corn and sorghum in the Republican Valley. SPRING CANKERWORM most severe and widespread since 1952. SMALLER EUROPEAN ELM BARK BEETLE continues to move westward. POTATO LEAFHOPPER, first found May 15. Other pests that were troublesome during the season included six-spotted leafhopper, mosquitoes, stored grain pests, two-spotted mites, corn leaf aphids, corn earworms, and corn rootworms. No new pests of major importance were encountered during the 1957 season.

Cereal and Forage Crop Insects: (Legumes) ALFALFA WEEVIL (Hypera postica) was heavy in the panhandle and the southwestern counties in alfalfa. Larval populations ranged upward to 1600 per 100 net sweeps. New records were established for Thomas, Arthur, Keith, Perkins, and Chase Counties. The infestation began in early March and continued to mid-summer. A few larvae were present in mid-September in Scotts Bluff County. SPOTTED ALFALFA APHID (Therioaphis maculata) was of little consequence in the State, although found throughout the major alfalfa producing regions and was found in numbers only in the northeast, southeast, and the Republican Valley areas. Surveys conducted through the winter months proved to be negative. The aphid was again found in the State in mid-April near Odell, Gage Co. By late May populations were generally light over the eastern third of the State. In August a small localized infestation began in a few fields in the northeast reaching 100 per sweep by mid-August, only to decline and become almost non-existent by September. About this time another infestation began in the Republican Valley reaching a population of 2800 per 100 sweeps by late September and then decreasing until November 13 when the area was covered by snow. No large population was recorded in the southeast until September 6 when it reached 800 per 100 sweeps and then remained stagnant. The aphid reached the Middle Platte Valley in early September but did not build up any great numbers. The highest population recorded was 40 per 100 sweeps. A fungus disease of the genus Entomophthora which began during the latter part of June and first part of July possibly held the aphid in check somewhat in the eastern third of the state. GREEN CLOVERWORM (Plathypena scabra) populations were very high in alfalfa and soybean fields in the eastern third of the State from mid-August through September. Counts in alfalfa fields reached a high of 185 larvae per 100 sweeps, and as high as 9 larvae on a single soybean plant. Damage was lessened in some areas by parasitism. ALFALFA CATERPILLAR (Colias philodice eurytheme) - Heavy populations occurred generally throughout the alfalfa producing regions from early June until late September. Larvae ranged from 4-8 per 100 sweeps in June to 800-1200 per 100 sweeps in late July in the southeast. ALFALFA WEBWORM (Loxostege commixtalis) occurred in outbreak numbers in southeast, northeast, south central and southwestern areas in alfalfa, beginning in early August. Webbing was very noticeable. Counts ranged from 60-270 per 100 sweeps. GARDEN WEBWORM (Loxostege similalis) infestations were moderate to spotted heavy in the south central and southeastern counties; from 100-250 per 100 sweeps in alfalfa. PEA APHID (Macrosiphum pisi) infestations first occurred in southeast areas in alfalfa and red clover during the latter part of April. Development was slow because of unfavorable weather conditions and populations did not reach economic proportions until early June, 360-2000 per 100 sweeps in the southeast. Populations then began to build up generally throughout the major alfalfa producing regions: northeast, 300-600 per 100 sweeps; Republican River Valley, 90-180 per 100 sweeps; panhandle, 100-250 per 100 sweeps; central, 50-125 per 100 sweeps. During late June and early July, a fungus disease (Entomophthora sp.) effectively reduced the population in the southeast and later in the eastern third and in the Republican Valley area. Populations began to build up again by mid-September but did not cause serious damage. TARNISHED PLANT BUG (Lygus lineolaris) populations ranged from moderate general to spotted heavy. The pest came out of hibernation during the second week of April with 3-5 per crown in the southeast and south central counties. Infestations became general over State by early June and continued until snow fell in November. At peak, counts of adults and nymphs ranged 780-1920 per 100 sweeps during mid-June in the southeast. ALFALFA PLANT BUG (Adelphocoris lineolatus) population was generally light to moderate in alfalfa throughout the State. Infestations ranged from 10-45 per 100 sweeps in the south central and southeastern portions in early June reaching a peak in mid-July when populations ranged from 200-1200 per 100 sweeps in southwestern counties. RAPID PLANT BUG (Adelphocoris rapidus) existed in a relatively light population in alfalfa: 100-120 per 100 sweeps in northwestern counties, 28-60 in northeast and 20-40 in Republican Valley. Very little damage. SWEETCLOVER WEEVIL (Sitona cylindricollis) overwintered adults were first observed in sweetclover and alfalfa litter in the southeast in early April. Populations were 1-2 per square foot and increased to 60-100 per 100 sweeps. Feeding on the newly emerged seedlings was more evident than the preceding two years. Populations then decreased during the summer months appearing again in numbers in early October in the southeast ranging 60-75 per 100 sweeps. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - Light infestations were found in alfalfa, small grains and corn in the northeast, south central, central Platte Valley and panhandle areas in late July through August. Light moth flights began at North Platte and Alliance in mid-August and reached their peak the first week in October. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) infestations were light on red clover in southeastern areas , 1-5 per 10 sweeps, and caused very little damage. CLOVER LEAF WEEVIL (Hypera punctata) - A light infestation prevailed generally in eastern areas, counts ranging from 2-6 per 100 sweeps in late May to 32-110 per 100 sweeps at mid-June. Little damage occurred. SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - A heavy infestation was found in the spring and summer in alfalfa and soybean fields in eastern, south central and central portions, counts from 160-450 per 100 sweeps. Some fields of alfalfa in the south central areas were sprayed. CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) was light to moderate throughout the year on alfalfa, small grains, pastures, and in lawns. PAINTED LEAFHOPPER (Endria inimica) was light to moderate in spring in alfalfa, small grains and pastures in southeastern and south central portions of the State but caused little damage. CLOVER ROOT CURCULIO (Sitona hispidula) produced no serious damage. CLOVER SEED CHALCID (Bruchophagus gibbus) caused light damage to alfalfa seed in Douglas, Madison, Thurston, and Saunders Counties. POTATO LEAFHOPPER (Empoasca fabae) - In 1957, eastern, south central, and central Nebraska experienced one of the most serious potato leafhopper outbreaks. The pest was first found on May 15 in Lancaster County. Populations continued to build up through the summer and did not disappear until late November in the Republican Valley area. Serious yellowing and "hopper-burn" resulted in many alfalfa and potato fields. BLISTER BEETLE (Epicauta spp.) populations were very high in alfalfa fields in the Republican River Valley, southeast and northeast Nebraska beginning in mid-June and continuing through September. The pests were very common on tomatoes and potatoes from mid-July to September.

A single days catch at a light trap at Lincoln revealed 2243 beetles. GRASSHOPPERS - Crop land species infestations were the most serious and most widespread since the mid-30's. Moderate to severe damage occurred in the eastern, central, and southwestern portions of the State, chiefly in alfalfa, clovers, pastures, corn, sorghums, and soybean fields. In some areas in late July all that remained of alfalfa was the stems. They then moved into and throughout corn fields. Those observed crossing roads averaged 8 per square yard in some areas. Surveys revealed that the initial hatch occurred during the third week in April. Primary species involved were *Melanoplus bilituratus*, *M. bivittatus*, and *M. differentialis* *M. femur-rubrum* hatch began in late June. Nymphal populations increased to 200 per square yard in areas of high egg concentrations and general populations of 75-100 per square yard were common. Infestations of all four important crop species of *Melanoplus* continued at high levels through most of the summer. Counts exceeding 10 per square yard in corn field margins were common. In many areas, especially in the south central, counts were more than 10 per square yard in entire corn fields. Alfalfa fields had counts in excess of 40 per square yard in some cases, averaging 25 per square yard in the generally infested areas. Marginal counts ran as high as 90 per square yard. Rangeland species were present in threatening infestations in northern Keith, southern Arthur and McPherson, northwestern Lincoln, western Deuel and central Cheyenne Counties. Local light infestations were found in Garden, northern Arthur, southern Grant, McPherson, Logan, eastern Lincoln and central Kimball and Banner Counties. The initial hatch did not begin until the second week of May. The major species involved were *Ageneotettix deorum*, *Aulocara elliotti* and *Phlibostroma quadrimaculatum*. During the second week of June the range species began a rapid development with counts ranging from 20-35 per square yard common. Considerable control programs were undertaken by the farmers and ranchers with 99,940 acres of rangeland sprayed in Keith and Garden Counties and about all of Fillmore County, including 43,000 acres of cropland, was sprayed by air. Fungus disease and sarcophagid flies were active along with blister beetles which were general over the eastern portion of the State.

(*Corn and Sorghum*) Although heavy flights of SEED-CORN BEETLE (*Agonoderus lecontei*) occurred at the light trap stations at Lincoln, North Platte, and Scottsbluff, no serious damage occurred. MAIZE BILLBUG (*Calendra maidis*) caused light to moderate damage in early June to corn grown on bottom lands in the southeastern area. BLACK CUTWORM (*Agrotis ypsilon*) caused moderate and spotted severe damage to corn in the eastern third of the State during early June. In some areas as high as 17 plants out of 25 were damaged. Two major moth flights occurred at Lincoln, one in mid-June and the second in mid-August. A major flight occurred during the last week in September at North Platte. CORN LEAF APHID (*Rhopalsiphum maidis*) infestations were moderate to severe in corn and grain sorghums in south central, central and eastern areas during July and August. High populations of lady beetles (*H. convergens* primarily), *Orius*, syrphid flies and lacewings developed rapidly in most areas to check the infestations before serious damage occurred. Retardation of seed development and loss in weight resulted in some areas. FALL ARMYWORM (*Laphygma frugiperda*) was light to moderate with spotted heavy infestations in corn and sorghum in the south central, eastern and central areas. In the south central areas this pest caused much ear-dropping in corn. ARMYWORM (*Pseudaletia unipuncta*) infestations in corn were relatively light compared with last year in the eastern and central areas, with little damage. CHINCH BUG (*Blissus leucopterus*) migrations from overwintering habitats to wheat began in mid-April, those from wheat to corn and sorghums in late June. Only light damage occurred as compared with last year. Fall surveys (1957), in 33 counties, revealed a generally light to spotted severe condition existing in the southeastern counties. Counts ranged upward to 1,714 bugs per square foot in some areas. CORN ROOTWORMS (*Diabrotica undecimpunctata howardi*, *D. virgifera* and *D. longicornis*) caused more damage than in the past several years. Southern corn rootworm adults were found in alfalfa fields in early May. The northern and western corn rootworm adults began appearing during the first week in July. CORN EARWORM (*Heliothis zea*) moderately infested field corn and sweet corn generally throughout southeast, south central and central regions. Damage to corn ears was heavy in nearly all southeast and south central counties with 80-90 percent infestation in late September. Heavy moth flights occurred at North Platte in early October. TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) was present in light to moderate numbers on corn in northeast counties, but only a light infestation occurred in the western Platte Valley area as compared with 1955. EUROPEAN CORN BORER (*Pyrausta nubilalis*)- The spring survey revealed a heavy winter mortality of approximately 84 percent in the northeast and 93 percent in the Platte Valley. Populations averaged 2,852 borers per acre in the northeast, 1,271 in the Loup Valley, 2,103 in east central, 1,280 in southeast, 856 in south central and 1,467 in the Platte Valley areas. Pupation of overwintering borers was approximately 100 percent by June 5. First moths appeared at Lincoln by June 10 and at North Platte by June 20 as corn was not at right stage, moths chose various weeds and other plants to support first brood. Because of this light infestation on corn, the farmers did relatively little control work. Light traps at Lincoln, North Platte, and Alliance revealed a heavy second moth flight within a single day high of 524 at North Platte on August 20, and 387 on August 26 at Alliance. The late plantings of corn and favorable weather conditions were partly responsible for the heavy second brood. The heaviest second-brood infestation was in northeast counties with 100 percent of many fields infested, averaging 5 borers per plant. Damaging infestations were also found in the Platte Valley, Loup, and Republican River Valleys and in the southeast. Results of fall survey conducted in 64 counties has been included in CEIR 8(3):37, 1/17/58. Average number of borers per 100 plants was 272 compared with 136 in 1956. Loss due to corn borer activity was 18,815,929 bushels valued at $20,697,521.90, almost four times more than in 1956. The following corn and sorghum insects occurred in light infestations or caused only light damage: seed-corn maggot, a sandhill cutworm (*Euxoa detersa*), a sod webworm (*Thaumatopsis pectinifer*), corn root aphid, stalk borer, wireworms.

Other Cereal and Forage Crop Insects: ENGLISH GRAIN APHID (*Macrosiphum granarium*) was light to moderate in wheat in southern areas during June. Peak counts averaged 62 aphids per 10 wheat head samples taken. PLAINS FALSE WIREWORM (*Eleodes opaca*) counts in wheat and barley in southern panhandle and southwestern counties were 1 to 2 per linear foot in early April, with adults very abundant under litter and at lights in July and August. SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) populations were heavy in oat and wheat fields in central and eastern regions, with counts of 210-450 per 100 sweeps common in early June. WHEAT CURL MITE (*Aceria tulipae*) was found in two isolated areas in the panhandle, southwest of Sidney and southwest of Scottsbluff extending into Banner County. No serious damage or outbreak occurred. HESSIAN FLY (*Phytophaga destructor*) populations increased over the past two years but still remain generally light. ARMYWORM (*Pseudaletia unipuncta*) was moderate in rank and lodged wheat in the east, south central and central Platte Valley. Counts were 28-36 per 100 sweeps during June and early July. PALE WESTERN CUTWORM (*Agrotis orthogonia*) infestations were moderate to severe in winter wheat and winter barley in panhandle and southwestern counties. Heaviest infestations were in western Keith, Perkins, and Chase Counties with counts in some areas of 30 larvae per linear foot. Approximately 45,000 to 50,000 acres were treated. The following pests were light or caused little damage: brown wheat mite, greenbug, wheat head armyworm.

Vegetable and Truck Crop Insects: POTATO LEAFHOPPER (*Empoasca fabae*) was serious in eastern and central counties. The first 1957 report was May 15 in Lancaster County. Serious yellowing and "hopper-burn" occurred on potatoes in central and eastern areas. COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) populations were light locally with no serious damage. CORN SAP BEETLE (*Carpophilus* sp.) was present in injured ears and stalks of sweet corn in eastern, central, and south central areas during the summer. POTATO PSYLLID (*Paratrioza cockerelli*) occurred in light to moderate to spotted heavy populations on lycium, potatoes and tomatoes in central and western areas. Serious psyllid yellows occurred on potatoes in the west. Counts were 80-898 per 100 sweeps on lycium and potato cull piles in early summer to 10 per 100 sweeps on field potatoes in late July and August. MEXICAN BEAN BEETLE (*Epilachna varivestis*) infestations were light to moderate in August in field beans in Scottsbluff area. In some fields serious skeletonizing resulted. BEAN LEAF BEETLE (*Cerotoma trifurcata*) caused light local damage in central and south central Nebraska with population down from last year. TOMATO FRUITWORM (Heliothis zea) infestations were light to moderate on garden and field tomatoes in eastern and central areas. TUBER FLEA BEETLE (Epitrix tuberis) appeared in small numbers on cull sprouts in late May and early June. Counts were 42-60 per 100 sweeps, averaging 53.3 per 100 sweeps in untreated potato fields in Scottsbluff area by mid-July. HARLEQUIN BUG (Murgantia histrionica) populations were light to moderate in eastern Nebraska on cruciferous plants. SQUASH BUG (Anasa tristis) was very abundant on cucurbits in gardens generally. IMPORTED CABBAGEWORM (Pieris rapae) was moderate to spotted heavy on cabbage and broccoli in eastern and central regions of the State. MELON APHID (Aphis gossypii) was present in high numbers on cucumbers and garden melons. Heavy damage was common in home gardens in eastern regions. SQUASH VINE BORER (Melittia cucurbitae) did moderate damage from mid-July to September. PEA APHID (Macrosiphum pisi) occurred in high numbers on garden peas and beans in late spring and early summer. ARCTIIDS were present in above normal populations during summer on nearly all garden vegetables. Very abundant on weeds and soybeans in the northeast and central regions. BEET WEBWORM (Loxostege sticticalis) populations were high in most beet fields in west, south central and central regions. Larval counts ranged from 60-84 per 100 sweeps in early June in south central area to 80-400 per 100 sweeps in panhandle area in early August. WESTERN BEAN CUTWORM (Loxagrotis albicosta) infestations were heavy locally in bean fields on the more sandy soils in Scottsbluff area. Damage to pods occurred. Light infestations also found in field corn in Scotts Bluff, Morrill, Garden and Keith Counties. Moths were present as far east as North Platte, Lincoln County.

Insects of Shade Trees, Perennials, and Other Ornamentals: SPRING CANKERWORM (Paleacrita vernata) surveys revealed much heavier and more widespread infestation than in past years. Greatest damage was in the Pine Ridge district in Chase County and eastward down the Platte Valley to Hall County. Approximately 75-85 percent of woodland areas and windbreaks in some regions were defoliated. CLOVER MITE (Bryobia praetiosa) migrations from lawn and perennial borders into homes generally heavy throughout State. Controls were used extensively. WALNUT CATERPILLAR (Datana integerrima) - A heavy population on walnut trees in the northeast during latter part of August stripped all leaves from trees in some areas. FALL WEBWORM (Hyphantria cunea) was very abundant on elm, poplar, and roadside shrubs in southeast, Loup Valley and northeast regions . Damage very noticeable. BAGWORM (Thyridopteryx ephemeraeformis) population on evergreens, pin oaks, sycamore, and spirea was heavy in the southeast through the summer. NORTHERN MASKED CHAFER (Cyclocephala borealis) adults were present at Lincoln, North Platte and Scottsbluff from early July to mid-August. Populations were light to moderate in lawns in eastern third of State. AN ASH TREE BORER (Neoclytus capraea) - Adult emergence in early March was greater than any time in recent years. PINE SAWFLIES (Neodiprion spp.) were found in several locations in central and north central areas. Light to moderate damage occurred to young trees near Halsey. ELM BORER (Saperda tridentata) infestation in elms along the Platte Valley and in eastern Nebraska was general. FLATHEADED APPLE TREE BORER (Chrysobothris femorata) was very abundant in American elms, especially those in decline due to drought or disease in the eastern area. A TUSSOCK MOTH (Lymantriidae) was very abundant on Chinese elm and roses through the summer and fall. Light to moderate infestations of GREEN-STRIPED MAPLEWORM (Anisota rubicunda) were found along the Missouri River Valley from Otoe County northward to Washington County. OYSTERSHELL SCALE (Lepidosaphes ulmi) was very prevalent on lilac in central and eastern localities. Heavy damaging infestations of EUROPEAN ELM SCALE (Gossyparia spuria) persist in the eastern third, central and western portions with many trees killed. NANTUCKET PINE MOTH (Rhyacionia frustrana) was very abundant on young ponderosa pine in established forest areas, and is found in some trees as far east as Otoe County. PINE NEEDLE SCALE (Phenacaspis pinifoliae) infestations were moderate to heavy on ponderosa pine in Pine Ridge,Halsey Forest and pine windbreaks in central counties. SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) is now as far west as McCook, Red Willow County and there are moderate populations in several areas in the southeast. SPIDER MITES (Tetranychus spp.) - Moderate to heavy infestations occurred on conifers, roses, and garden vegetables in eastern third and central portions. Controls were extensive. LILAC BORER (*Podosesia syringae*) is abundant in the southern portion of the State; serious damage in some areas. AN OAK KERMES SCALE (*Kermes* sp.) damaged native oaks along the Missouri River from Omaha, Douglas County south to Richardson County. LEAF ROLLER populations were heavy along the Platte Valley and in the northeast on locust trees with severe defoliation in some areas. IRIS BORER (*Macronoctua onusta*) was more prevalent than in past years in gardens and on greenhouse plants. PEACH TREE BORER (*Sanninoidea exitiosa*) - Very abundant in fruit trees in early spring. Loss of trees resulted in some areas.

Stored Grain Insects: CONFUSED FLOUR BEETLE (*Tribolium confusum*) - Of all the major stored grain pests, this pest was found in greatest numbers, especially in wooden structures, CADELLE (*Tenebroides mauritanicus*) was very abundant in wooden grain structures in the southern tier of counties. Infestations in wheat more general than in past years. RICE WEEVIL (*Sitophilus oryza*) was most important grain pest as to damage incurred. Found generally throughout the State in small numbers. GRANARY WEEVIL (*Sitophilus granarius*) was more numerous than the rice weevil but damage less severe. Found generally throughout the State. INDIAN-MEAL MOTH (*Plodia interpunctella*) was one of the most numerous of all stored grain pests, but probably lease important from damage standpoint. ANGOUMOIS GRAIN MOTH (*Sitotroga cerealella*) - Very abundant in the southern tier of counties, especially in grain shipped from farm storage to the granary. RED FLOUR BEETLE (*Tribolium castaneum*) - Only an occasional beetle found in inspections of various granaries. KHAPRA BEETLE (*Trogoderma granarium*) surveys were conducted in 50 seed houses, granaries and elevators this past year. Light infestations of *T. glabrum*, *T. parabile*, and *Attagenus* spp. were found but no khapra beetles.

Insects Affecting Man and Animals: MOSQUITOES - The 1957 summer, as was the case in 1956, again saw one of the most serious mosquito outbreaks. Above normal rainfall in the east, central, south central and western regions brought on large populations. In the east the principal species was *Aedes vexans*. In the west, south central and central regions, the principal species were *Aedes dorsalis* and *Culex tarsalis*. CATTLE GRUBS (*Hypoderma* spp.) - Fly activity was very noticeable beginning in late April and continuing into June in the sandhill region. Populations then developed into a normal situation. A few grubs were found in the backs of animals as early as December at North Platte when counts averaged 1-5 per head. HORN FLY (*Siphona irritans*) was very numerous on animals in west and north central regions and was a problem on unsprayed animals in the sandhills. STABLE FLY (*Stomoxys calcitrans*) population was much higher in 1957 than in 1956, and was a severe problem in the eastern portion of the State. HOUSE FLY (*Musca domestica*) was a constant nuisance in urban and rural areas. CATTLE LICE (*Bovicola bovis* and *Haematopinus* spp.) were normal on cattle in feed lots in eastern and central Nebraska. Cattle not treated in many cases were heavily infested with one or both species. AMERICAN DOG TICK (*Dermacentor variabilis*) population was normal in the Pine Ridge area. A few specimens of the BROWN DOG TICK (*Rhipicephalus sanguineus*) were found in the Pine Ridge district. CHIGGER (*Eutrombicula alfeddugesi*) populations in eastern and southern Nebraska were much lower than in past years. SCREW-WORM (*Callitroga hominivorax*) was reported in southern Jefferson County around the navels of newly-born calves.

Cooperators: The following Nebraska entomologists also contributed to the Cooperative Economic Insect Survey during 1957: R. V. Connin, C. Jones, H. J. Ball, O. S. Bare, R. Stapes, L. W. Quate, C. Walstrom, D. Fitchett, J. Bell, K. Pruess, A. Hagen, G. Weekman, and W. Rapp.

SUMMARY OF INSECT CONDITIONS - 1957

MINNESOTA

Reported by R. Flaskerd, Hart Graeber, T. T. Aamodt, W. P. Trampe, and J. R. Sandve

Cereal and Forage Crop Insects: EUROPEAN CORN BORER (*Pyrausta nubilalis*) - Overwintering mortality for the State averaged 18 percent this past spring. Pupation of overwintering borers began during the week of June 3 and emergence began during the week of June 17. Ideal weather conditions prevailed at egg hatch and during borer development, accounting for the higher populations especially in the southwestern and west central districts. Heavy second-generation moth flights during the week of August 18 resulted in high egg counts especially in south central, southwest, and west central districts. In the southwest and south central districts, second-generation borer numbers were as high as expected but in the west central district the high egg count produced fewer borers than anticipated. The 1957 fall survey showed higher populations statewide than in 1956, with a correspondingly greater damage to corn. Losses due to corn borer damage were increased because of the greater amount of stalk breakage and dropped ears resulting from the weather-delayed harvest. Fall survey counts of borers per 100 plants by districts averaged as follows: southwest-208, south central-121, southeast-40, west central-69, central-48, east central-19. GRASSHOPPERS - Spring and early summer were characterized by long periods of wet, cool weather over much of the State. Vegetative growth was greatly accelerated and soil temperatures remained low; this resulted in a delayed egg hatch. *Melanoplus femur-rubrum*, the dominant species, was greatly influenced by these conditions. Damage by grasshoppers was not apparent in most areas because of the rapid plant growth. Fungus disease stimulated by damp weather conditions caused considerable mortality of grasshoppers during the hatching period and extended into the egg-laying period. This is the first year that high numbers of *Melanoplus femur-rubrum* have been observed to be infected with fungus disease. Late summer and fall weather conditions were favorable for egg deposition over most of the State, especially in the Red River Valley area. It appears that *M. bivittatus* and *M. differentialis* populations are building up in scattered areas. Predators observed during egg survey were generally less numerous than in 1956. Surveys indicate considerable infestations might occur in the northwestern area and possibly in some southern areas. In most instances grasshopper infestations occurred in legumes and grasses to be used for hay; for that reason it is quite difficult to get a correct estimate of the overall economic savings or losses. Where spraying was done, it prevented infestations from spreading into nearby crops. Information gathered from county agent reports indicates that the State as a whole had a saving of $591,450 due to spraying, and that a loss of $1,404,350 was sustained where spraying was not done. SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) was first reported in southeastern Minnesota on May 9, 8 per 50 sweeps. By the end of May extremely heavy numbers were found in all districts on alfalfa, bromegrass, flax, and small grains. Aster yellows in flax was extremely damaging, especially in the Red River Valley area. Loss estimates by county agents range from 10-80 percent. It has been further estimated by grain companies and others that the State's flax harvest was the smallest since 1936. The yield per acre is also the lowest since 1936. Aster yellows played the major role in this reduction. POTATO LEAFHOPPER (*Empoasca fabae*) was found in Minnesota on May 23. Some yellowing which appeared in new seedings of alfalfa in southern counties in late summer was probably caused by this insect. SPOTTED ALFALFA APHID (*Therioaphis maculata*) was found in an alfalfa field in Houston County May 23 and a single specimen was reported from Lincoln County. These were the only specimens found throughout the 1957 season. BLISTER BEETLES (*Epicauta* spp.) increased over 1956. They were numerous in alfalfa. Movement of beetles from alfalfa to soybeans caused much concern to farmers in west central and central districts. Some chemical control was applied on soybean field margins. Areas having low grasshopper egg counts in 1957 presumably will have low blister beetle populations in 1958. GREEN CLOVERWORM (Plathypena scabra) was reported in July damaging various crops such as alfalfa, soybeans, corn, peas, and garden plants. Damaging populations were first reported in 1945 on experimental soybean plats and were not again observed until this year. Complete defoliation of soybeans and seedling alfalfa was observed. Damage was most prevalent on soybeans. In many cases defoliation of seedling alfalfa was not noticed until after oat harvest. A LOOPER (Rachiplusia ou) was also reported in July in the extreme southern counties on soybeans, garden plants, and corn. There were scattered reports of spraying for control of R. ou and P. scabra. STALK BORER (Papaipema nebris) was reported in the south central district in July. Damage was confined to cornfield margins. PEA APHID (Macrosiphum pisi) populations in May were extremely heavy in central and west central areas on alfalfa. Predator populations were low and cool weather favored aphid development. Some chemical control was carried out in the west central district. In June pea aphid populations declined and were not a problem the balance of the season in alfalfa. PLANT BUGS (Adelphocoris spp., Lygus spp.) are of concern mainly to legume-seed growers. In the northwest district, where most of the growers are located, use of chemical control measures is increasing. Damaging populations were reported in the northwest district in June resulting in severe blasting of buds. SWEET-CLOVER WEEVIL (Sitona cylindricollis) overwintering adults were numerous and fed heavily on sweetclover during May in the northwest district. Some alfalfa fields also showed considerable damage. Heavy emergence of the summer brood took place in July and migration to new seedling sweetclover was observed. Emergence from fallow fields resulted in heavy marginal damage to adjacent sweetclover stands in the northwest district. BILLBUGS (Calendra spp.) - Scattered reports of heavy damage to corn in low lands. Some reseeding was required. PAINTED-LADY (Vanessa cardui) larvae were reported in July moving from thistles to soybeans. A FLEA BEETLE (Systena frontalis) was reported damaging soybeans in the west central district. CUTWORMS caused some loss to sugar beets in Norman County. A number of fields were replanted. WIREWORMS - Scattered reports of damage to corn. An insect, (probably of the Septis group) was found extremely abundant in all wild rice areas during harvesting operations.

Fruit Insects: CODLING MOTH (Carpocapsa pomonella) at LaCrescent moths 95 percent emerged by May 17. In 1956 the first moths were found during the first and second week of June in southern Minnesota. The earlier emergence in 1957 coincided quite closely with the season which was 10-14 days earlier than 1956 insofar as apple development was concerned. ORCHARD MITES (Panonychus ulmi, Tetranychus telarius) - Damage more severe than 1956. Miticides used in commercial orchards quite generally during season. APPLE MAGGOT (Rhagoletis pomonella) emerged, July 6, at LaCrescent - peak of emergence occurred during middle of July. APPLE CURCULIO (Tachypterellus quadrigibbus) - Very little damage found. PLUM CURCULIO (Conotrachelus nenuphar) emerged in southeastern Minnesota during week of June 2. Damage light in sprayed commerical orchards but severe on apples and plums on backyard unsprayed trees. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - Increasingly important in commercial apple orchard areas throughout entire south-east area of State during 1957. Due to prevailing cool weather, egg hatch was delayed (about 50 percent hatch at LaCrescent on May 28. Control achieved in first, second and third cover sprays. FRUIT TREE LEAF ROLLER (Archips argyrospila) was not a serious problem in 1957. OYSTERSHELL SCALE (Lepidosaphes ulmi) emergence began at LaCrescent on May 23. Control successful in commercial orchards. SAN JOSE SCALE (Aspidiotus perniciosus) was found at LaCrescent on three trees. STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) was present mainly in neglected fields. Serious in several fields in LaCrescent area. WHITE GRUBS (Phyllophaga sp.) were troublesome throughout growing season, mainly a problem in fields preceded by grass sod. SPIDER MITES (mainly Tetranychus telarius) - Infestations serious in strawberries in many areas. Some varieties resistant. Chemical treatment effective. CYCLAMEN MITE (Steneotarsonemus pallidus) - Duluth and Iron Range areas - infestation serious in most varieties of strawberries. RASPBERRY SAWFLY(Monophadnoides geniculatus) was often severe in unsprayed raspberry fields. RASPBERRY CANE BORER (Oberea bimaculata) was severe in many old raspberry fields.

Truck Crop Insects: ONION MAGGOT (Hylemya antiqua) population was high in the Anoka area. Protection of onions with insecticides (seed and soil treatments) prevented heavy losses. Infestation in Hollandale area generally low - seed treatment gave adequate protection. Examination of two onion fields in Anoka County revealed lower overwintering populations than a year ago. SIX-SPOTTED LEAFHOPPER caused severe losses to carrots due to aster yellows in Twin City area and aster yellows were severe on celery in Twin City, Hibbing and Duluth areas. Purple top was present on up to 10 percent of potatoes in Red River Valley areas and on up to 90 percent in Internationsl Falls area.

Forest, Ornamental and Shade Tree Insects: The outstanding threat at the present time to the spruce-fir region of Minnesota is the current outbreak of the SPRUCE BUDWORM (Choristoneura fumiferana). Detection surveys in 1954 indicated that light populations were present wherever balsam fir occurred in the Superior National Forest. Since that time budworm populations have increased to alarming numbers; in 1957 many thousands of acres of balsam-fir and spruce suffered heavy defoliation. The prospects, according to 1957 surveys are that the populations will maintain itself or increase markedly in 1958. An aerial survey conducted in July 1957, showed moderate to heavy defoliation over approximately 660,000 acres of spruce-fir type in northeastern Minnesota. This is an increase of about 240,000 acres over that observed in 1956 and 580,000 acres over that of 1955. No tree mortality has been observed except on a small island in Wind Lake (T64N R9W Sec. 19). However, some top killing is evident north of Lake Kabetogama and in the vicinity of Jackfish Bay. In 1957, noticeable defoliation was evident along the north shore section of the Superior National Forest. Several thousand acres of overmature balsam fir in this area were found to be heavily defoliated. The LARCH SAWFLY (Pristiphora erichsonii) infestation of tamarack continues in Minnesota for the ninth consecutive year. An aerial survey indicates that the total area of defoliation was approximately the same as in 1956. The majority of stands showing heavy to complete defoliation are located in the northeast district of the State and most stands in Koochiching and Itasca Counties in the north central district. Tamarack mortality is evident on good sites in most north central bogs of the State. This mortality has shown a slight increase in 1957 over 1956. Population of the second brood of the INTRODUCED PINE SAWFLY (Diprion similis) were numerous in many areas of Crow Wing and Cass Counties causing heavy defoliation of white pine. Second-brood larvaecontinued feeding until late October causing heavy defoliation. Some top killing of white pine may become evident in the spring of 1958, as a result of sawfly feeding in the fall of 1957. During September some control spraying was carried out by private landowners around Gull Lake and Lake Hubert. This infestation will warrant careful watching in 1958. If populations continue to increase, additional control work may become necessary in order to protect valuable stands of white pine. The JACK-PINE BUDWORM (Choristoneura pinus) infestation since 1954 has shown considerable fluctuations in population and the extent of areas infested. In 1957 the infestation in Crow Wing, Hubbard, Cass, Beltrami and Pine Counties generally declined and in many instances the infestation disappered completely. Damage in these areas is generally very light with little top kill and practically no mortality of merchantable timber. In July and August three new areas of jack-pine budworm defoliation were observed for the first time during the current outbreak. The defoliation in these areas is generally moderate and no chemical control is contemplated in 1958. Due to the decline of the jack-pine budworm populations in 1957, very little spraying was done. In Hubbard County approximately 500 acres of jack pine on State land were sprayed. This area was composed largely of jack pine plantations that had been severely defoliated in 1956 and which had a high level of budworm populations again in 1957. A JACK-PINE EUCOSMA (Eucosma sonomana) caused up to 50 percent terminal breakage in one stand of jack pine in Hubbard County. PINE ROOT COLLAR WEEVIL (Hylobius radicis) was reported from the east central district and infested from 26 percent to 50 percent of trees in jack pine plantations. Moderate infestations were reported on Scotch pine. Heavy PITCH TWIG MOTH (Petrova comstockiana) infestations on jack pine were observed near Park Rapids and Brainerd. RED-HEADED PINE SAWFLY (*Neodiprion lecontei*) caused moderate defoliation on young jack pine trees in Sherburne and Benton Counties. Heavy infestation of CONE BARK BEETLES (*Conophthorus* spp.) on red pine cones reported in Cass County. PINE TORTOISE SCALE (*Toumeyella numismaticum*) populations were lighter than in 1956. A moderate infestation was reported on a Scotch pine plantation near Brainerd. BALSAM-FIR SAWYER (*Monochamus marmorator*) infested 25 percent of susceptible trees in a stand near Bemidji. BALSAM TWIG APHID (*Mindarus abietinus*) infestations were reported heavy in scattered locations in north central and northeastern Minnesota. YELLOW-HEADED SPRUCE SAWFLY (*Pikonema alaskensis*) severely defoliated white spruce in south St. Louis County. Some mortality of trees is expected due to this infestation. APHIDS (*Cinara* spp.) were reported in heavy concentrations on spruce (ornamental) over much of the State. They were more of a problem in 1957 than in the past. ASH PLANT BUG (*Neoborus amoenus*) was a problem statewide and appears to be on the buildup. BROWN-HEADED ASH SAWFLY (*Tomestethus multicinctus*) heavily defoliated ash trees in a wind-break in central Minnesota. WALKINGSTICK (*Diapheromera femorata*) infestations are localized and defoliation generally light to moderate. Widespread damage to burr oak near Brainerd and Mora by SCALE INSECTS (*Kermes* spp.). A heavy infestation of POPLAR and WILLOW BORER (*Sternochetus lapathi*) was observed in a Twin City area nursery. OYSTERSHELL SCALE (*Lepidosaphes ulmi*) infestations appeared quite static the past several years.

Insects Affecting Man and Animals: A case of MYIASIS was reported this past summer in a child. The larvae were excised by a physician from pustules on side of the child's neck and were determined by the University of Minnesota, Entomology Department, to be the species *Wohlfahrtia vigil*. A WOOD ROACH (*Parcoblatta pennsylvanica*) was particularly abundant in homes located in wooded areas around the Twin Cities. The AMERICAN DOG TICK (*Dermacentor variabilis*) was quite abundant and was somewhat higher than usual. BIRD MITES were reported from homes with birds nesting or roosting under eaves or between walls. POWDER POST BEETLES caused serious damage to structural timbers in a barn in southern Minnesota. TOBACCO MOTH (*Ephestia elutella*) caused considerable consternation to a Grade A milk producer in Nobles County. Populations were so heavy in alfalfa hay that milk sanitation was difficult. MOSQUITOES - Emergence of early single-brooded mosquitoes occurred in late April and approximately the first week in May in Twin City area. There was limited emergence of the principal pest mosquito, *Aedes vexans*, by May 3. By May 17, early single-brooded species in Itasca Park had also emerged and adults were active. Heavy rains during the third week in May resulted in heavy emergence of mosquitoes during the first week in June throughout most of the State. Heavy rains during the middle of June resulted in further hatching with many fourth-instar larvae present on June 18 with emergence occurring about June 22. Continued wet weather brought additional hatching and by July 12, heavy populations were quite general throughout the State. Flood conditions in western central Minnesota early in July apparently caused some increase in mosquito populations in that area creating concern among farmers as to possible adverse effects on milk and beef production. There appeared to be no further large-scale hatches but mosquito populations persisted at rather high levels into August and September. Cool weather together with favorable moisture conditions permitted survival of adult mosquitoes during the late summer and early fall. Some mosquitoes were noticeable even as late as the first part of October. Generally speaking, the 1957 season was one of peak mosquito abundance. There was an increased interest in municipal mosquito control throughout the State, and many towns and villages purchased their own equipment for applying insecticides or hired the work done by local ground or aerial sprayers. Two infestations of SUBTERRANEAN TERMITES (probably *Reticulitermes flavipes*) were reported from St. Paul; one in a private home and one in a warehouse. These are the first authenticated reports of termites in the Twin City area. Termites previously have been reported from Worthington and Luverne.

INSECT CONTROL

Canning Crop Insects:		Acreage Treated
European Corn Borer		
First Generation		
Ground Spray	4847	
Aerial Spray	474	5,321
Second Generation		
Ground Spray	19,693	
Aerial Spray	24,243	43,936
Corn Earworm (Aerial Spray)		411
Pea Aphid (Aerial Spray)		16,555
Field Crop Insects 1/		
Grasshopper (all crops)		85,905
European Corn Borer (Field Corn)		66,910
Cutworms (Corn, Sugar Beets)		9,721
Aphids (Barley, Oats)		4,153
Sweetclover Weevil (Sweet Clover)		15,500
Red Clover grown for seed (Plant Bugs, etc.)		4,880
Alsike Clover grown for seed (Plant Bugs, etc.)		4,300
Alfalfa grown for seed (Plant Bugs, Pea Aphids, etc.)		2,380
Northern Corn Rootworm		61,588
Wireworms (Corn) Seed Treatment		125,500
Soil Treatment		23,118
Loopers (Green Cloverworm on Soybeans and Alfalfa)		6,975
Sugar Beets - Beet Webworm	10,150	
Cutworms	3,325	16,925
Wireworms	3,450	
Forest Insects:		
Jack-pine Budworm		1,000
Spruce Budworm		100
Introduced Pine Sawfly		60
Forest Tent Caterpillar		50
Biting Insects:		
Mosquitoes		37,885 2/

1/ Estimated by County Agents

2 / Incomplete figure

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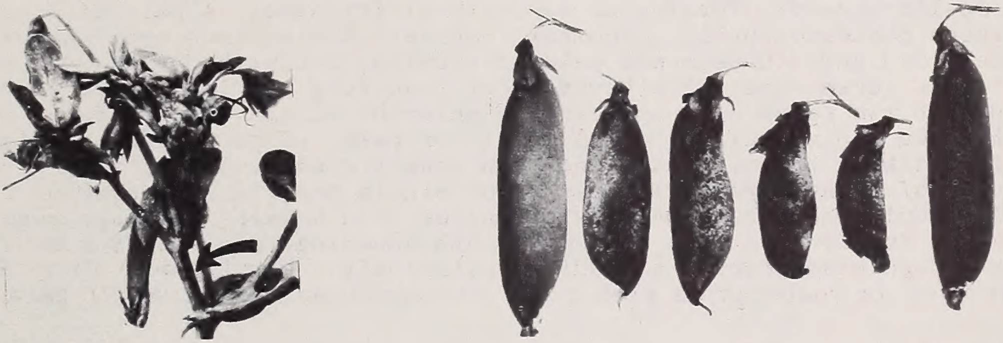
OREGON - ADDITIONAL SUMMARY NOTE FOR 1957

MOUNTAIN PINE BEETLE (*Dendroctonus monticolae*) attacking lodgepole, increased in averages of infestation from 52,420 acres in 1956 to 71,200 acres in 1957. These infestations are located in the Deschutes and Rogue River National Forests. ENGELMANN SPRUCE BEETLE (*D. engelmanni*) infestations were up 14,120 acres (from 1956) to 25,280 acres in 1957. The concentration of damage by this beetle is located in the Wallowa-Whitman National Forest. (Capizzi). (See CEIR, Vol. 8, No. 5, p. 79).

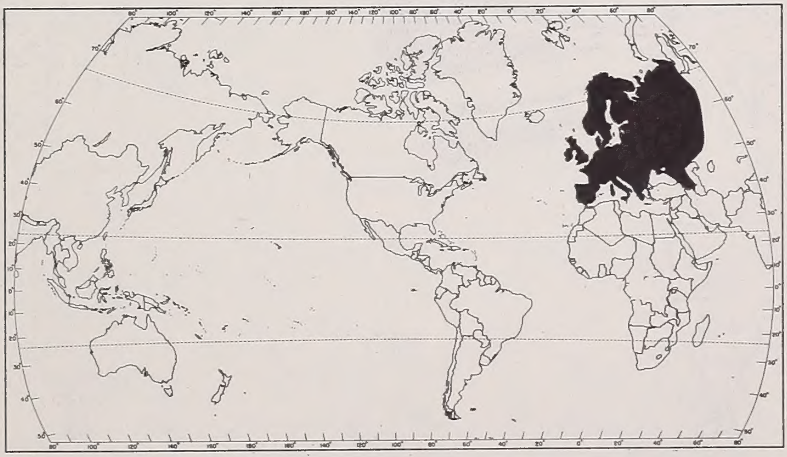
PEA THRIPS (Kakothrips pisivorus Westwood)

Economic Importance: Pea thrips frequently causes extensive losses of peas and beans throughout Europe. In Sweden it is considered one of the most important pests of beans. It was first observed in that country in 1899 and in 1912 caused such serious damage that some of the crops were reduced to one-third and even to one-quarter of the normal yield. During the following years the losses involved were estimated at about 50 percent. Crop losses in late peas may be as much as 50 to 60 percent in northern Germany and complete loss of crop has been known in some districts of England. The flowers, pods and terminal shoots of host plants suffer most from attack. The pods are undersized and unhealthy, presenting a characteristic silvery appearance. Occasionally the flower itself is injured so severely that further development is unlikely.



Damage to Peas by Pea Thrips

Distribution: Occurs throughout Europe including the Caucasus in USSR.



General Distribution of Pea Thrips

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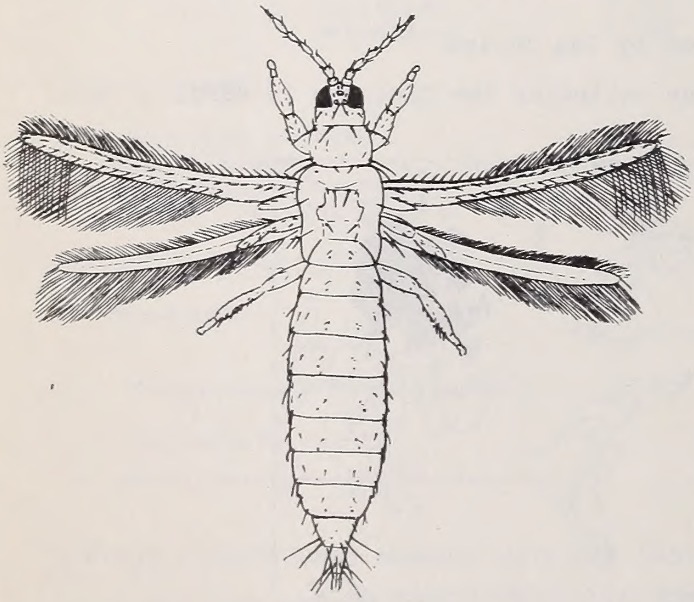
* Also called bean thrips, "Blackfly" (Thripidae, Thysanoptera) No. 40 of Series

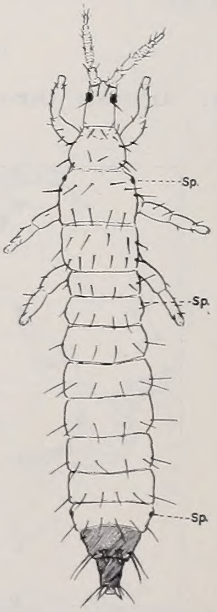
Hosts: Known to feed on many wild and cultivated hosts, but prefers legumes, especially beans and peas.

Life History and Habits: The adults appear in June and oviposit until late July with the eggs usually being laid in the stamen-sheaths of the hosts. The eggs hatch in about a week. The nymphs feed for about two weeks, passing through two instars, then enter the soil for hibernation at depths of 2-16 inches. In Switzerland up to 375 nymphs per square yard were found at depth of 16 inches with none being observed in meadow-land adjoining the pea fields. The nymphs hibernate for about 10 months, passing through 2 additional instars. After transformation, the adults rest for 2 days before emerging from the soil and then enter a preoviposition period that lasts from 7 to 13 days. The females lay an average of 17 eggs at the rate of 1 to 4 per day.

Description: Egg very small and bean-shaped. Second-instar nymph 1.8 mm. long, yellow to orange-yellow in color, apex of 9th and entire 10th abdominal segments brown. Posterior dorsal margin of 9th abdominal segment with comb of fine triangular spines, 9th and 10th segments each with pair of heavy spinelike postero-dorsal setae. Adult female 1.85 mm. in length, dark brown. Forewings heavily tinged with brown, lighter at base, hindwings almost transparent. Ocelli present, forming an equilateral triangle. A pair of long setae between posterior ocelli, another long seta behind each eye. Antennae 8-segmented; 3rd and 4th segments paler ventrally, 3rd with dorsal, 4th with ventral forked sense cone. Prothorax wider than long and longer and wider than head with two pairs of long setae on anterior margin, two pairs at each posterior angle and a smaller median posterior pair. Legs normal, all tarsi yellow, fore tibiae brown. Costa and both longitudinal veins of wing with complete row of setae. Posterior margin of eighth tergite with comb of fine setae. The adult male about one-sixth smaller than female, antennae much paler than in female. On each side of eighth abdominal segment is a short, curved, blunt-pointed process extending posteriorly. (Prepared in Plant Pest Survey Section in cooperation with other ARS agencies.) CEIR 8 (7) 2-14-58



Adult Female



Second Stage Nymph

Figurės (except map): Nymph and adult from Williams, C. B. 1915. Ann. Appl. Biol. 1(3/4):222-246. Damage from Buhl, C. 1937. Ztschr. f. Angew. Ent. 23(1):65-113.